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NOTES ON THE SEAL AND WHALE FISHERY OF 1900.

By Thomas Southwell, F.Z.S.

The unusually mild winter of 1899–1900, and the consequent absence of ice in the bays on the east coast, led to the prediction that the past season would be a very favourable one for the sealing fleets, both in the Gulf of St. Lawrence and off the east of Newfoundland. This has been amply verified, and the take was the largest which I have had to record in my notes, now extending over twenty consecutive years. Other circumstances have also been in favour of the venture, and with the increased value of produce the past season must be regarded as quite a record one.

The steam sealing-fleet of the year 1900 consisted of nineteen vessels—the 'Esquimaux' of Dundee having been added—eleven of which cleared from St. John's, one from Bay Roberts, three from Greenspond, and four from Channel (Port au Basques)—the latter for the Gulf fishery—all sailing, as usual, on the 10th of March.

By Monday the 12th the Seals were found covering a vast field of level ice about forty-five miles N. by E. of the Funks, and extending over a circuit of some thirty miles, the number being very large, and the ice-field was so easily approached that all the vessels could reach its occupants readily, and lie in close proximity to them. The killing commenced at once, and vast numbers were "panned," many of which, as usual, were never seen again, at least by those who killed them. Bad weather and fogs came on, the vessels being separated from their panned Seals; and there were nasty rumours of misappropriation by certain of the crews, which led to subsequent unpleasant litigation—an event, be it said, happily of rare occurrence.

The young Seals were in excellent condition, and were rapidly being got on board, but unfortunately a change took place before the work was completed, and stormy weather, accompanied by dense fogs, first delayed the vessels, and then rendered their passage home in their heavily laden condition very perilous. Notwithstanding this, however, four of them were in port with large cargoes by the 27th, and others followed in quick succession. The 'Diana,' the last of the St. John's steamers to arrive, was the only one which missed the main body of the young Seals off the east coast, but she succeeded in picking up over 2000 young Harps, and then went to the neighbourhood of Groais Island, some thirty miles east of which she killed about 8500 old and Bedlamer Seals, and over 500 old and young Hoods. The old Seals were all "batted," and during their collection the 'Diana' drifted south with the floe to the neighbourhood of Funk Island.

This was the only considerable number of over-year Seals killed by any of the vessels, with the exception of the 'Vanguard,' which had 2700, and the 'Nimrod' 5200, the latter having been unsuccessful at the Gulf fishery.

Of the four vessels which went to the Gulf of St. Lawrence, the 'Nimrod,' as just mentioned, met with no success in that locality, but, going north through the Strait of Belle Isle, made up her catch of 5546 (mostly old Harps and Bedlamers) between Groais Island and Funk Island. The 'Harlaw' and the 'Hope' got well among the western Harps, and secured good catches of young Seals; but the 'Kite' was very unfortunate. Being unable to reach the western Harps, Capt. Young steered north-east in search of the Hooded Seals, with little better success, there being no ice suitable for them to whelp on; the result was that they took to the standing ice between the Island of Anticosti and the shore, and drift ice coming in, rendered it im-

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possible for the vessel to reach them. 271 young and 181 old Hoods were the only reward for a very arduous voyage.

The total number of Seals brought in by the fleet of nineteen steamers, of the aggregate register of 6053 tons, and manned by crews numbering 3760 men, was 353,276 (against 268,787 in the previous season), of an estimated net value of £96,720 (against £68,527 in 1899). To these must be added some 10,000 taken by the schooners and by the inhabitants of the Magdalene Islands, which would bring the value of the produce up to nearly £100,000. This was very equally distributed, all but three or four of the vessels making paying voyages, and the majority doing exceedingly well. The 'Neptune' took the lead with 36,255 Seals, followed closely by the 'Terra Nova' and the 'Aurora,' with more than 32,000 each; eight others had over 15,000 each, and five more above 10,000; the 'Kite,' for the reasons already named, brought in the produce of 452 Hooded Seals only. The average of the whole nineteen vessels was 18,594, eleven of them having cargoes above that average, and eight below it. The price of produce was fairly remunerative, oil fetching, say, £23 per tun; and Mr. Thorburn tells me that a new market has been found for oil in Italy, which promises to be of great assistance to the sealing industry. No casualty has been reported to mar the success of the voyage.

In the ten years, 1871 to 1880, inclusive, 218 vessels killed 2,434,063 Seals, and in the decade, 1891 to 1900, there fell to the lot of 181 vessels 2,422,125 of these animals. But these enormous numbers by no means represent the whole reckoning, for they are only the produce of the steam fleet, and do not include (i) those killed and lost on the ice, (ii) those taken by the schooners, or (iii) those killed from the shore, or on the Labrador coast. Even the total number of skins exported from Newfoundland would not give the exact number killed, for they would not include the first mentioned shrinkage, and I have not the full statistics of the two periods at hand; but my object in making the comparison was to ascertain, if possible, what effect this enormous destruction of the old and young Seals has had upon the numbers frequenting the ice-floes of the North Atlantic in the breeding season. The result is rather surprising, for it will be seen that in the first period the catches averaged 11,165 per vessel, and in the last 13,382, showing an increased yield instead of a falling off, as might have been expected. In the first period, too, many of the vessels made second, and some even third trips. In spite of the number killed by man and by natural causes, a goodly residue must escape annually (sometimes when the season is unfavourable to the sealers a large proportion) to continue the species, notwithstanding all the dangers to which they are liable.

Mr. Thorburn has been kind enough to obtain for me the following information with regard to the doings of the Cabot Whale-fishing Company, which is useful as indicating the seasonal movements of the cetaceans named :—

The 'Cabot' left St. John's on Nov. 1st, 1899, for Hermitage Bay, and commenced fishing in that neighbourhood on Dec. 1st. She killed five "Sulphur-bottoms" before the end of the year; in January she got four others, and in February three; in March seven, and in April five; in May seventeen. In April she killed her first "Humpback," and in May five others, as well as four "Finbacks"—in all, fifty-one Whales. When this information was received she was on the point of leaving her winter fishing-ground, and going north, probably to Green Bay, where during the summer the last two species mentioned above are found. The fifty-one Whales yielded 250 tuns of oil, which is this year worth £20 per tun, and the seven Sulphur-bottoms about a ton of whalebone over one foot long, which is known as payable bone, but is of poor quality.

Just twenty years having passed since I contributed the first of these annual notes on the Seal and Whale Fishery to the 'Proceedings' of the Glasgow Natural History Society (the nineteen which have followed are in the consecutive volumes of 'The Zoologist'), and great changes having taken place in that time, especially in the Whale-fishery, to which we have now to refer, it may not be amiss to contrast the season of 1881 with that which has just passed; and, as the condition of the ice to a very large extent rules the success or otherwise of both industries, more especially that of the Whale-fishery, I shall first refer to the great contrast which exists in that respect between the two periods.

The year 1881 was as remarkable for what is known as a "south-ice year," as that of 1900 has been for the absence in the Greenland Seas of this indispensable shelter both for the Right Whale and for the breeding Seals. The year first named seems to have been the culminating point of a series of south and east ice years; there had been very little southerly drift, and one vast ice-field extended in the months of April and May from the east point of Iceland in a north-easterly direction to Bear Island, where it made a sharp bend to the E.S.E., extending to within 2½° of the North Cape. When Capt. David Gray in the 'Eclipse' entered the ice, on May 23rd, he had to bore his way through three hundred miles of that obstruction before he reached the "land-water" of Spitzbergen, where the Whales are first looked for. Of course, under these conditions, the east coast of Greenland was utterly unapproachable, and it was equally useless to attempt to penetrate to the then all but unknown Franz Josef Land. Of late years both these regions have been accessible every year, and the latter mysterious archipelago has been repeatedly visited, wintered in, and to a large extent mapped; but in the year 1886 the ice was so heavy in the usual summer fishing-ground off the Greenland coast, that Capt. David Gray, as an alternative, made an attempt to reach the Franz Josef Land waters, hoping to explore that region in search of Right Whales (which subsequent experience has proved do not extend their wanderings so far to the eastward), but was stopped by the impassable ice in 75° N. lat., 36° 44′ east longitude. In 1898, so changed was the condition of the ice, that Dr. Nathrost was able to reach White Island, as well as the mysterious Wyche's Island, and performed the feat of circumnavigating the whole of Spitzbergen in a single season; whilst to the westward the east coast of Greenland has been approachable for the last few years. In the past season Prof. Kolthoff was enabled to follow the coast from Cape Broer Ruys to Pendulum Island; and the captain of the Norwegian whaler 'Cecilie Malene' took his vessel as high as 75° 30′ N. latitude, a point further north than is positively known to have been previously reached by a ship.* Lieut. Amdrup's expedition to the same coast passed through the ice barrier on July 6th, 1900, in lat. 74° 30′ N., 30° 58′ W. longitude, and from the vessel or by boat he mapped the coast southward to Tasiusak in 65° 35′ N. latitude.* There are, however, indications that a change is taking place. The Norwegian Walrus-hunter 'Hertha' found the ice very heavy in the past season on the coast of Franz Josef Land, and was unable to reach Cape Flora. The 'Stella Polaris' also experienced similar difficulties in the same seas; and, as will be seen, the west coast of Spitzbergen was encumbered with heavy ice, forming a great contrast to the open condition of the Greenland coast. But here also Capt. Robertson reports that the ice was accumulating, and the prevailing winds were easterly up to the time of his departing for Davis Strait on June 10th. A stoppage of the southerly drift, especially if accompanied by severe frosts cementing the pack together, would rapidly restore the normal condition of the ice, and the Greenland coast, as well as the seas to the east of Bear Island, would again be rendered unapproachable.

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* Geogr. Journ. Nov. 1900, p. 567.

Now, when we consider that the presence of ice sufficiently heavy, although not too close, upon their feeding-grounds in about 75° to 79° N. latitude in the meridian of Greenwich, and again in about 73° N. and 13° W. longitude, is an absolute necessity for the well-being of the Right Whale, and that the Harp Seals haul up to whelp on the heavy ice usually found in certain well-known localities to the north-east of Jan Mayen, there seems little room for surprise that in the altered conditions which have prevailed of late years there should have been such a marked absence of both these animals. It is a question what has become of the Right Whales which formerly so abounded in the Greenland Seas: have they been totally fished out, or have they abandoned quarters which have become unsuitable, for others more in accordance with their requirements, and, if the latter, where have they betaken themselves to? When we consider the vast extent of these seas, and the increased wariness of the animals brought about by constant disturbances, it seems highly improbable that the last Whale has been found and killed in this trackless ocean. Surely a remnant must have been left had they not deserted their former habitat of their own accord. But where can they have migrated to? There seems to be an abundance of Whales on the west side of Greenland in Davis Strait, and were it not that a passage round the north of Greenland into Robeson and Kennedy Channels (where they have never been seen) is rendered impossible, as they would undoubtedly perish, suffocated under the unbroken fields of fixed ice, and that they have not been known to pass south of Cape Farewell (there being no other apparent communication between the two seas), it might readily be supposed that they had joined their brethren in the locality above mentioned; but, so far as can be ascertained, such a change of location is an impossibility, and the only certainty is that the conditions necessary to their requirements have of late years greatly changed for the worse, and that the Whales themselves have disappeared—whether permanently or not, who can say?

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* *L. c.* p. 663.—The expedition met with Musk Oxen in abundance in the neighbourhood of Scoresby's Sound, and brought home one calf alive, in order to secure which, it is said, a herd of fourteen were shot down. Later on a second calf, which did not live, was obtained by the same costly process. The Walrus-hunters also brought home fourteen young ones alive; one yearling male was sent to the Hamburg Zoological Gardens, and five to Antwerp; but three of the latter died in transit. As a writer in the 'Field' of Oct. 20th observes, "it would be interesting to know how many of these harmless animals were shot down by the Norwegian hunters this season to enable them to capture the fourteen calves?" It is evident that the sooner the ice closes again on the Greenland coast, the better will be the chance of the survival of this interesting animal in that locality.

As to the Seals, the case is much more simple: the destruction year after year of a very large proportion, often virtually of the whole brood and of a large number of old Seals in addition, congregated in a limited area, must inevitably tell in course of time, and sooner or later reduce the breeding pack to such an extent that they would be no longer worth pursuing, and even lead to their final extermination. This has doubtless to a very large extent been the case. The British vessels have quite abandoned the pursuit, and what there is left of the Greenland sealing is now quite in the hands of the Scandinavians, whose more economical outfits enable them to continue the struggle long after we have been driven from the field.

In the year 1881 Dundee sent out fifteen vessels, and Peterhead five. Nine of the Dundee vessels and five of those from Peterhead took part in the Greenland sealing, killing between them 23,984 of these animals. The other six Dundee ships went to Newfoundland, where they captured 139,985 more Seals, making a total of 163,969 in all, before they turned their attention to the Whales. This branch of the fishery was pursued by twelve of the Dundee vessels in Davis Strait, with a result of 48 Right Whales; two others fished for Bottlenose Whales in the Greenland Seas, capturing 22. Four of the Peterhead whalers which gave their chief attention to the Greenland Bottlenose Whales killed 94 of these and 23 Right Whales, making a total return of 163,969 Seals, 71 Right Whales, 116 Bottlenoses, and 33 tons 6 cwt. of bone. Compare this with the past season's catch, as stated farther on, and with the fact that in 1897 one Whale was captured, and one other seen; in 1898 not a single Whale was seen; in 1899 one Whale was seen and captured; but in the past season of 1900 a diligent search in the Greenland fishing-grounds, extending over six weeks, did not reveal the presence of a single Whale. In those days we hear nothing of such small deer as Bears and Walruses, which were treated as by-products.

But it is time to speak of the voyage of the past season. The 'Balæna,' the only vessel which went to Greenland, after her unsuccessful search in that locality, departed on June 10th for Davis Strait; but it was not till Sept. 20th that she killed her first and only Whale, having the misfortune to lose a second to which she fastened. Capt. Roberts reports that in the fall a large number of Whales were sighted, but that, owing to almost incessant gales of wind, it was impossible to send out the boats; and this seems to have been the experience of all the vessels so far as weather was concerned. The 'Balæna' brought home 21 tuns of oil and 14 cwt. of bone, the produce of the one Whale, and 91 Walruses, also 18 Bears.

The 'Eclipse' had a very arduous time, and it was not till Sept. 19th that she killed her first Whale, although plenty were seen; on the 23rd she captured another, and a third on Oct. 10th. This last proved a fighter from the first, and, after smashing one of the boats—fortunately no lives were lost—required two explosive rockets before it succumbed. The voyage home was no exception as to weather, and the 'Eclipse' arrived in a very battered condition, but with three very fine Whales of 10 ft. 5 in., 11 ft. 6 in., and 12 ft. 3 in. bone respectively, which yielded 46 tuns of oil and 60 cwt. of bone, the latter largely in excess of the average, as is generally the case with very large Whales, the ordinary proportion being about 1 cwt. of bone to each tun of oil.

The 'Esquimaux,' after returning from Newfoundland, as already stated, proceeded to Davis Strait, where she killed her first Whale in Pond's Bay on July 9th, and a second on the day following. On the 14th of the same month a larger Whale was killed, but it was not till Sept. 23rd that another was harpooned. This was in Coutts Inlet; but it unfortunately broke away, carrying with it three hundred fathoms of line. Thereafter the weather was too stormy for fishing, and the 'Esquimaux' returned with three small Whales, yielding 20 tuns of oil and 20 cwt. of bone. This, with the sealing venture, constituted a very fair season's return.

The 'Diana' was the most fortunate vessel of the fleet. During May fifty-four Walruses were secured at the south-west fishing; on July 7th she killed her first Whale, and before the end of the month she had two others on board. A fourth was killed in Coutts Inlet on Sept. 9th, and two others on the 23rd of the same month. After encountering frightful weather, the 'Diana' arrived at Dundee with 6 Whales, 54 Walruses, and 24 Bears—yielding 76½ tuns of oil and 77 cwt. of bone.

The 'Nova Zembla' killed her first Whale in Coutts Inlet on Aug. 11th—a fine fish of 11 ft. bone—and on the 23rd of the same month an even finer fish of 12 ft. bone; but a third to which she fastened unfortunately broke away, and was lost. Her catch was 2 Whales, 12 Walruses, and 4 Bears—producing 38½ tuns of oil and 41 cwt. of bone.

The 'Active' visited the station in Hudson Strait (see Zool. 1900, p. 71), where she found all well. One small Whale had been killed on June 10th, also a number of Walruses and Bears. In all she brought back with her 28 tuns of oil, 7 cwt. of bone, 327 Walruses, and 76 Bears.

The season of 1900 will long be remembered by the Davis Strait whalers as one of the most stormy within the experience of the oldest hands, and this was rendered the more tantalising from the fact that fish were in plenty; but it was impossible to send the boats away, and even when this could be done the ice hampered their movements, or enabled the Whales to escape.

The result of the season's fishing was 16 Whales, 494 Walruses, 53 Seals, and 145 Bears, producing 230 tuns of oil and 219 cwt. of bone; in addition to which was the produce of one Whale, 138 Walruses, and 3400 Seals, equal to 60 tuns of oil and 10 cwt. of bone, brought home from the Cumberland Gulf station by the Peterhead brig 'Alert.' No White Whales were killed, owing to the bays in which they are usually beached being blocked with ice.

The present price of oil is £22 per tun, and of size bone £1400 per ton. The Walrus hides vary greatly in value according to quality—*i. e.* thickness—and the Seal-skins may be taken all round at 3s. each. At this rate the estimated value of the year's produce would be something like £30,000, as against £38,000 in the previous season.

I am informed that, so far as the British whalers are concerned, the Greenland Seas will be left undisturbed in the coming season.

I have to express my thanks to Mr. James Mitchell and Mr. R. Kinnes, of Dundee, for kindly furnishing me with information with regard to the Dundee whaling-fleet; and to Mr. Michael Thorburn, of St. John's, Newfoundland, for like favours from that port.

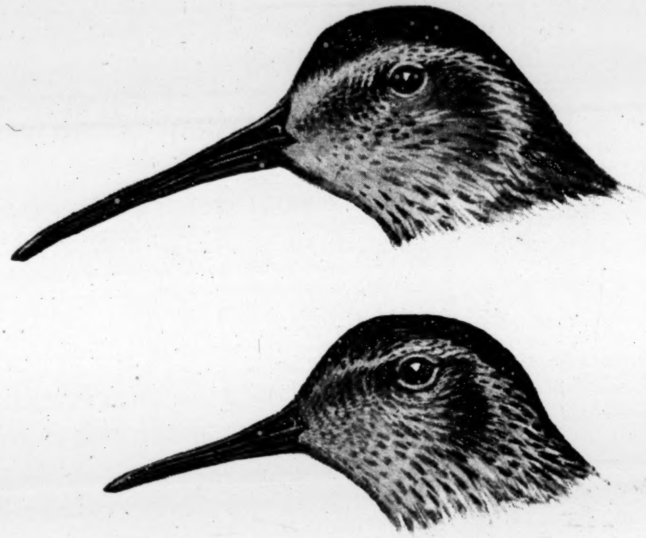
VARIETIES OF THE DUNLIN.

By J. Backhouse.

For several years past, when observing birds on the coast of Yorkshire, the writer has taken particular notice of what may be looked upon as our commonest Wader—the Dunlin. He has also seen the species repeatedly at its breeding haunts upon some of the highest Yorkshire "Fells," and now ventures to offer a few remarks upon the subject for the benefit of those who, like himself, know and can appreciate these common and often despised little birds wherever they meet with them. That two remarkably distinct races of the Dunlin regularly occur in Yorkshire is a fact realised by ornithologists, and by those who are habitual gunners on our coasts. The one is a strongly built bird, with long straight bill, and wings some 4¾ in. in length, found in enormous flocks, often congregating with other Waders; the other is a smaller, slighter built bird, with a shorter and straighter bill, and a decidedly shorter wing-measurement.

The latter bird is more solitary in its ways, and, as the late Mr. John Cordeaux points out, "differs from the more common species in resorting to the borders of the marsh-drains, or to the 'fittie-land' adjoining the 'muds,' in preference to the flats, and is remarkable for its extreme tameness, permitting a very close approach." This small Dunlin was described by Brehm, under the distinctive title *Tringa schinzii*, as early as 1822, and, as compared with certain other so-called *species*, is equally worthy of a separate designation to-day; for, although mere relative measurements of bill or wing may not *of themselves* be looked upon as sufficient to differentiate the two forms specifically, there are other reasons why the question should, we think, be reconsidered. The following illustration showing the typical heads of the respective forms is here given, in the hope that it may prove useful as showing *the general pose of the bill* in each case.

It is somewhat remarkable, that whereas the Dunlin seldom, if ever, exhibits any *violent* variation in its plumage, such as a tendency to melanism or albinism, in the smaller race alluded to we have a constant and well-marked variation from the type.



The Dunlin.—Larger and smaller forms.

Neither the late Mr. Cordeaux nor Mr. Oxley Grabham—both of whom have had practically a life-long acquaintance with the Dunlin—have known any such *violent* variations as are just alluded to; nothing more, in fact, than the great variation in overall markings, which presumably gave rise to the name of *Tringa variabilis*, as applied by Bechstein and others.

Some time ago, while collecting on the Yorkshire coast, a heavy shot brought down some Knot (buff-breasted), several Dunlin, many of them in exceedingly beautiful breeding plumage (thanks to the lateness of the season), and also a solitary example of the "drain Dunlin," which so closely resembled the Little Stint as to be mistaken at the moment for that species. The markings of the back especially, coupled with the short measurement of bill and wings, almost suggested a possible case of hybridity; such, however, we feel sure, is not the case, but the specimen in question was Brehm's *T. schinzii* pure and simple.

The following list shows the comparative dimensions of several specimens of both larger and smaller races in the writer's collection :—

SMALLER FORM.

	Bill.	Wings.
♂ Spurn, 1898	0·99	4·1
♂ Dunn Fell, 1884	1·1	4·2
♀ ,, ,,	1·2	4·3
♂ Teesdale, 1886	0·99	4·15
♀ ,, ,,	1·0	4·2
Juvenile, Teesdale, 1882	1·05	4·2
Adult, Ramsgill, 1886	1·2	4·5
Juvenile ♀ Ramsgill, 1886	1·2	4·3

LARGER FORM.

Adult, Helmsley, 1891	1·35	4·65
♂ Spurn, 1887	1·3	4·65
♀ ,, 1882	1·3	4·6
♀ ,, 1887	1·3	4·55
♀ ,, 1884	1·4	4·75
♂ ,, 1887	1·27	4·55

In the foregoing lists it will be at once noticed that all the large birds are from the sea-coast; and, oddly enough, among several specimens before us, collected on the North of England "fells" during the summer-time, not a single example of the larger billed bird is to be found, nor can we recollect having seen any but the smaller race upon these "fells." The question then seems to resolve itself, first of all, into a distributional one as to the breeding of the two forms; that point settled, we shall surely come one step nearer to a satisfactory basis upon which to establish the validity or otherwise of *Tringa schinzii* as a species. The writer has now been fortunate in discovering what may well be looked upon as "headquarters" for Yorkshire breeding Dunlin, and it is to be hoped that during the coming season careful observation can be made upon a large number of nesting birds.

Meantime the evidence of two well-known north-country ornithologists must now be given as bearing in an important manner upon the subject at issue.

In a letter, dated Jan. 30th, 1899, Mr. Harvie-Brown writes as follows:—"The short, straight-billed form breeds very abundantly in the Outer Hebrides; also in Tiree and elsewhere in the west and north, where I have taken their eggs. Here also, within five miles of this house (Larbert, Stirlingshire), in two localities, the short-billed form is found nesting; I had their eggs here several seasons, and can always go to their nesting-ground any season. In Sutherlandshire I have taken a few Dunlins' eggs. The birds appeared to me to be larger than the Hebridean birds, but not so large as others which I have shot on the Firth of Forth, where, however, I have, during the prevalence or after a sharp change of wind, also shot the small form. If we have an east wind blowing at Grangemouth, or between that and Kincardine, which continues any length of time, our coast becomes *bared* of almost all the *big flocks of Dunlins*. But at such times *small* trips of perhaps two, three, four to six may be seen, and these are almost invariably the small short-billed birds. Or if a west wind has prevailed for long (and that is our best wind for shooting the shore-birds on our coast) immense flocks of Dunlins are found—thousands strong; on one occasion I fired two barrels into a huge flock upon Grangemouth breakwater, ... and picked up sixty-seven; . . . . but of *all these* not one was a short-billed bird. But if the wind suddenly went round from west to east, these big flocks flew right away across to the Fife shore; and if the wind continued twenty-four hours in the east, then we would begin to pick up the short-billed birds, apparently in family parties. My own belief is that these birds come across from 'Clyde' to 'Forth,' with (or rather *against*) the change of wind."

Again, in a letter from Dumfries, Mr. Robert Service states: "A good many pairs nest along the merse-lands west of Southerness Point, and these certainly belong to the small-bodied and short-billed race, if race it be. I always think their summer plumage is not so deep or bright as the others that, at that time, are still flying along the sands in great flocks, and that even till the end of May are to be seen or heard flying northward to further breeding quarters."

A FEW FURTHER NOTES ON THE GREAT SPOTTED WOODPECKER (*DENDROCOPUS MAJOR*).

By Oliver H. New.

I have already recorded an observation on this bird in 'The Zoologist' (1900, p. 278), and, having made some further notes from personal observations, which may be of interest, I propose to set them out in detail.

The previous note was made on May 15th, and during the remainder of that month I was frequently able to watch the tapping process, and to confirm the theory of its being used as a call between these birds. I found that the tone of the note never varied appreciably when the same bough was made use of, and, although I discovered the bird tapping on other trees on two occasions, yet the dead pine-bough mentioned in my former note was evidently the favourite place, owing to its proving so excellent a sounding-board. At a distance of some fifty or sixty yards from this pine-tree stood a partially dead beech-tree, and at a height of twelve feet or thereabouts from the ground, in the face of the trunk, I observed a freshly made hole, beneath which chips of dry wood were scattered on the ground. Suspecting that my friends *D. major* were responsible for this hole, I kept a sharp look-out, with the result that on several occasions, as I approached the tree, I saw one of these birds hurriedly leave it, and fly away to a distance. I soon discovered that, with these birds, owing to their extreme shyness and marvellous keenness in sight, it was impossible to make further observations without my being concealed, and consequently I took up a position (May 23rd) behind the lower branches of a beech-tree, at a distance of five or six yards from the hole, of which I had an excellent view.

After waiting for a quarter of an hour, at 5.30 p.m., the male bird flew to the tree, and settled on a dead bough just above the hole. He executed a series of comical sideway jumps, at the same time peering about him cautiously, eventually tapping gently with his beak upon the branch on which he was perching;

but this produced very little sound, and he soon gave it up and flew away.

After about ten minutes both male and female birds appeared, and danced about on the trunk and the branches of the tree close to the hole, their antics being most amusing to watch. Presently the female bird perched upon a horizontal branch slightly below the level of my line of vision, and I actually observed the male bird tread her for some seconds. During this operation the male bird balanced himself by keeping both wings fully extended, and I obtained a particularly fine view of the outline of the wings and their beautiful markings. Fortunately my ambush proved an excellent one, and my presence was entirely unsuspected, although I was so close to the birds that I hardly had occasion to use my glasses. I was particularly impressed by the fact that both birds constantly uttered the peculiar soft twittering notes I had previously described—a kind of whispered sound of pleasure and satisfaction, as it were, to one another, which was most pleasing to the ear; while they never once gave utterance to their somewhat harsh, laughing, almost Owl-like cry.

Two days later I took up my position again at 7 a.m., and, after watching nearly half an hour, was amply rewarded, as both birds at length appeared. The male went inside the hole, and disappeared from view; but presently his head appeared, and a beakful of chips of wood was thrown from the nest and scattered on the ground. He worked away busily, and it was interesting to observe the curious jerk he gave to his head as he disposed of each beakful.

Sometimes one and sometimes both birds were on the tree, but the female appeared to do no work. When alone she perched perpendicularly on the tree-trunk, and peered into the hole; then she went inside and peered out; the next minute she was out again, and was apparently testing the hole by going in and out repeatedly, making a careful inspection of her future home both inside and out. On the two following days I again watched the male bird tapping on his pine-wood sounding-board, and was struck by the fact that the interval between each series of taps was longer than when I had first observed it earlier in the month. Another curious thing was that a final tap was added separately, as though one had been forgotten. After this the tapping was seldom, if ever, heard at all, which I attribute to the fact that the birds were then nesting, and that there was no further need for this method of attracting attention. I was unable to definitely satisfy myself that the tapping is done by the male bird only, but strongly incline to the view that it is so, as I never observed the female make use of this signal. I am not aware how far previous observers have confirmed this theory, and shall be interested to know what others may have to say in reference to it.

The last day upon which I have any note of hearing this tapping is May 27th, and, indeed, after that date I failed to make any observations of interest. I cannot say positively whether eggs were laid in the nest or not, for I have a great dislike to disturbing birds in any way; while, owing to absence from home during June, I was unable to discover whether a family appeared or not. The sequel to my story is, however, of considerable interest. On the night of Monday, Aug. 6th, the tree in which the nest was made was blown to the ground.

I was fortunate enough to obtain permission to cut a section from the trunk containing the Woodpecker's hole, and, after sawing through the tree in two places, managed to take home the prize. I subsequently reduced this section to a manageable size, and, having done so, cut the trunk through horizontally some four inches below the hole, and now have the nest in two sections. The measurements may be of interest. The opening is three inches from top to bottom, and two inches wide; the depth of the hole is eight inches, and the measurement from back to front inside five inches. The bottom of the hole is left somewhat rough, with small points of wood sticking up, but the entrance is most beautifully smooth and evenly worked. The hole is cut through the bark, and the section shows that the wood is sound for an inch and a half, after which the rest of the excavation was in quite rotten wood. There is another hole about two inches above and slightly to the left, which was commenced first, but subsequently abandoned in favour of the completed one. The reason for this is evident, as the face of the unfinished hole is perfectly soft and rotten, and the bark, being gone, it was unsuitable; whereas the face of the other hole is sound and firm. In this instance there is only one entrance to the nest, and not, as is said to be sometimes the case, two or more.

THE BIRDS OF GREAT YARMOUTH AND THE NEIGHBOURHOOD.

By Arthur Patterson.

(Continued from vol. iv. p. 535.)

Fulica atra. Coot.—C. Not so abundant as formerly, but still plentiful. When the Broads are frozen over many repair to Breydon, where they fall comparatively easy victims to the punt-guns. A number killed there, Dec. 13th, 1899. They also then occasionally take to the roadstead. Between three hundred and four hundred in one flock on Breydon near my houseboat, Dec. 26th, 1899.

Grus communis. Crane.—A. Though at one time a Norfolk resident, this species is now only an accidental straggler. Three or four are recorded for this locality; the last shot at Halvergate, May 29th, 1888.

Otis tarda. Great Bustard.—A. Although extinct as a resident, migratory examples of this bird occur from time to time in this county. One was observed to come over sea and drop in a turnip-field at Horsey in 1820 (B. of N. vol. ii. p. 30). Another was watched for some time by Capt. Rising on the Horsey marshes, Jan. 17th, 1867.

O. tetrax. Little Bustard.—A. A fine adult female shot on Southtown marshes, near Yarmouth, March 14th, 1858. One at Bradwell, November, 1885. A third at Waxham, Aug. 10th, 1889; and on May 3rd, 1898, one was shot at Kessingland in full summer plumage.

Œdicnemus scolopax. Stone-Curlew.—R. Rarely met with here. One shot on Breydon walls, July 31st, 1897, and another on the Bure marshes on Sept. 16th, 1898.

Glareola pratincola. Pratincole.—A. Messrs. Paget record: "A pair shot on Breydon wall, May, 1827." They were male and female; their stomachs were filled with beetles. Were extremely dirty and besmeared with blood, and Harvey's (the birdstuffer) wife washed them "as she would stockings," and hung them out to dry (B. of N. vol. ii. p. 65). A third example is referred to.

Eudromias morinellus. Dotterel.—R. R. Has in a few instances in late years been secured on the North Denes; much less frequent than in the earlier half of the century. An aged gunner recently informed me that (when a young man in the fifties), he several times met with these birds on the denes, which were so tame that he used to walk round them, in lessening circles, to get them to "bunch up" before shooting them. An example killed itself against Winterton lighthouse, May 30th, 1898; same time two were taken at Repps; two or three others August of same year.

Ægialitis asiatica. Caspian Plover. — A. An adult male of this Asiatic species (now in the Norwich Castle Museum) was shot in a market-garden bordering the North Denes, Yarmouth, on May 22nd, 1890. Two were seen, but only one killed.

Æ. hiaticula.—Ringed Plover.—C. With us more or less all the year round. In spring greater numbers, passing, one or two couples still endeavouring to nest on the shingle patches above high-water mark. In the seventies several nests might be discovered near the rifle-butts. I have known of some instances where eggs have been taken home by certain persons, and the young have been hatched out. This is a very wary species, often alarming flocks of Dunlins on the approach of danger. Local ornithologists distinguish a larger and a smaller variety. Local, "Ring Dotterel" and "Stone-runner."

Æ. cantiana. Kentish Plover.—N. U. May be "frequent," but is not easily recognisable, at a distance, from the immature of the Ringed Plover. I occasionally see a couple or more on Breydon in May; observed three there on a mud-flat, May 30th, 1898.

Charadrius pluvialis. Golden Plover.—C. Common in the autumn, when individuals with partly black breasts are sometimes obtained. We very rarely observe it on the spring migration, although thirty were observed in March a year or two since on the Bure marshes during a severe fall of snow. I observed one as early as July 14th, 1896, on the Bure marshes.

Squatarola helvetica. Grey Plover. — C. Small flocks of beautiful adults generally visit Breydon on their way north in spring. Sometimes abundant in autumn, as in late September and early October, 1899, when hundreds were seen, and many shot. A very late spring migrant on Breydon, June 15th, 1899.

Vanellus vulgaris. Lapwing.—C. Not so abundant as formerly, and very few nest in the neighbourhood now. Sometimes plentiful in autumn, using the uplands in daytime, and crossing to the marshes at nightfall. I have seen large flocks arrive in severe weather. Hundreds, in company with Gulls, feeding on the marshes on drowned worms, Jan. 7th, 1891, after a local inundation, due to a breakage in Breydon walls. Local, "Peewit," "Green Plover," and "Hornpie."

Strepsilas interpres. Turnstone.—C. More numerous in the spring migration than in autumn. A flock of these, in nuptial attire, scrambling among the refuse and weeds on the flint-walls of Breydon searching for *Gammarus marinus* is an interesting sight. They are equally nimble and restless on the "flats."

Hæmatopus ostralegus. Oystercatcher. — N. U. Messrs. Paget's remark, "Not uncommon on the beach," well applies to this species: it is seldom seen on Breydon, the favourite resort of so many waders. Seven, however, were killed there on Jan. 9th, 1897. Local, "Sea-pie."

Recurvirostra avocetta. Avocet. — R. Formerly nested in Norfolk. Less seen now than a few decades ago. Six were observed on Breydon, May 3rd, 1887; I saw four on the 4th. Three were noted same locality, June 15th, 1891.

Himantopus candidus. Black-winged Stilt.—A. "A pair shot at Hickling in 1822; another, two miles up the North River, in 1824" (Paget). The latter example is in the possession of Mr. Dye. Two or three others have since been recorded as seen or shot.

Phalaropus fulicarius. Grey Phalarope.—R. R. "Rather rare; eight or nine in the winter of 1828" (Paget). Shot occasionally in late autumn; one killed in a ditch near the town, Oct. 25th, 1896. One in mixed plumage shot Sept. 8th, 1899.

P. hyperboreus. Red-necked Phalarope.—R. R. The Messrs. Paget speak of it as "very rare." I have known of more occurrences of this species than the preceding. The Phalaropes are rather partial to small isolated pools; have known them seen or shot in ditches and ponds. One of this species swimming with Ducks on a pond at Hopton, Sept. 29th, 1881 (B. of S. p. 145).

Scolopax rusticula. Woodcock.—C. Uncertain visitor; always some, occasionally numbers, according to wind. The early October moon, with N.W. wind, favourable to its arrival. During the migration of this species many untoward fatalities are generally recorded, as beheading against telegraph-wires, capture in the streets, &c. Very dark example mutilated by Hooded Crows lying at tide-mark on beach, Dec. 27th, 1899.

Gallinago major. Great Snipe.—R. R. "Not uncommon in the autumn" (Paget). Before the sand hills were so devastated by traffic odd birds were sought for in September by local gunners. Seven or eight in neighbourhood in 1880. Usually very fat. Decidedly prefers the sand-hills of the coast to the marsh-lands. Example brought to market, Sept. 20th, 1899. I saw one there September, 1900. Local, "Solitary Snipe."

G. cœlestis. Common Snipe.—A few still nest in the neighbourhood. Occasionally during spells of severe frost a break in the weather will, for a few hours, or perhaps for a day or two, find the saline ditches near the Denes and on the marshes fairly alive with them. The first really sharp day's frost is always hailed with delight by those fond of Snipe-shooting. Such a "rush" occurred on Dec. 11th and 12th, 1899, when many scores were brought to Durrant, the game-dealer. A few hours' frost will reduce their plumpness; it was noticeable those brought up on the 13th were not so fat as those of the 11th. Continued severity drives them southward. In December, 1893, a remarkably large and russet-coloured female was killed at Caister, answering to *Gallinago russata*, Gould.

G. gallinula. Jack-Snipe.—C. The occasional late stay of this bird in its winter resort has led to the opinion that it has occasionally bred here; but, notwithstanding every effort having been made to substantiate this, nothing has occurred to justify the belief. This species does not seem so impatient of bad weather as the preceding.

Macrorhamphus griseus. Red-breasted Snipe.—A. This rare British species has been met with on three occasions: the first shot in the autumn of 1836 is recorded by Yarrell; the second in Oct. 1841; and the third, shot on Horsey Marshes, on Oct. 9th, 1845 (B. of N. vol. ii. p. 348).

Limicola platyrhyncha. Broad-billed Sandpiper.—A. Four occurrences are recorded for Breydon. The first on May 25th, 1836, is the first recognised British example. Other dates, May 26th, 1856, April 23rd, 1858, and Sept. 5th, 1891, the last one on a meadow near Breydon.

Tringa maculata. Pectoral Sandpiper.—A. First British example killed on Breydon in Oct. 1830. Five or six others since; three being shot respectively on the 10th, 12th, and 13th Sept. 1890. Another Aug. 18th, 1897.

T. acuminata. Siberian Pectoral Sandpiper—A. An adult example of this bird was killed on Breydon on Aug. 29th, 1892; a second example was subsequently discovered in the Norwich Castle Museum, which had been killed near Yarmouth in September, 1848.

T. alpina. Dunlin.—C. Abundant in spring and autumn, increasing in numbers in winter, especially during severe weather. Breydon mud-flats swarmed with them during sharp frost in second week of December, 1899. It does not nest in the county; but I have observed young birds on Breydon in 1898 as early as July 7th.

T. minuta. Little Stint.—F. C. This species is most frequently met with in autumn, particularly in the month of September, when in some years it is not uncommon on the Breydon mud-flats. Unusually numerous first half of September, 1881.

T. temmincki. Temminck's Stint.—R. R. A spring and autumn visitor. Mr. Stevenson, in 'The Birds of Norfolk,' vol. ii. pp. 363–366, gives a detailed account of occurrences, the majority being recorded from Breydon. It has a peculiar habit of towering and uttering its sharp *ptirr*-ing call-note.

T. subarquata. Curlew-Sandpiper.—F. C. "Common in winter, but rare in summer plumage" (Paget). Occasionally mixes in goodly numbers with Dunlins. Have observed several in nuptial plumage on Breydon. Local, "Pigmy Curlew."

T. striata. Purple Sandpiper.—F. A few usually observed in October and November; generally singly or in couples on the beach. Exceedingly rare at other times, or on Breydon. It appears here to be very unsociable, even with others of its own species. Has a decided partiality for weedy stumps left uncovered by the tide, amongst which it hunts for prey.

T. canutus. Knot.—C. Rarer in the red plumage than formerly. Very few now in May on Breydon. Common in autumn; and from its extreme tameness few escape the gunners, whose "call," in spite of lessening numbers, easily allures the survivors within gunshot. Is remarkably sociable, consorting with any of the waders who will tolerate its company.

Calidris arenaria. Sanderling.—F. C. Mostly met with on the beach. A few in spring in full plumage. In January beautiful examples, which on the wing look white, are frequent, especially in hard weather. Is the nimblest runner of all the waders.

Machetes pugnax. Ruff.—R. Formerly nested in the Broad district; has occasionally attempted to do so of late years, but to small purpose. In September immature birds are occasionally met with. Messrs. Paget refer to it as common at Acle and Reedham. Mr. J. H. Gurney gives the following calculation of the number of nests recorded during the past forty years in Norfolk ('Zoologist,' 1899, p. 115):—1858, about fourteen nests; 1868, about five nests; 1878, about two nests; 1888, about one nest; 1898, no nests.

Tryngites rufescens. Buff-breasted Sandpiper.—A. Three occurrences recorded at Yarmouth, respectively, in 1840, 1841, 1843. Two others have been met with in Norfolk, *viz.* at Sherringham in 1832, and another at Cley in 1889.

Totanus hypoleucus. Common Sandpiper.—C. Frequents the river Bure, also Breydon walls, in spring and autumn. Has a habit of feeding in little parties (eight being the greatest number I have ever seen together), and constantly flying and alighting ahead of sailing yachts or wherries, noisily protesting. I have long suspected its nesting here, having observed it all summer through; first Norfolk nest discovered under a gooseberry bush at Hickling, May 25th, 1897.

T. glareola. Wood-Sandpiper.—R. R. Generally met with in autumn; about one or two yearly. Stevenson (B. of N.) gives several dates; mostly Yarmouth examples. Three recorded August, 1893.

T. calidris. Redshank. — C. Nests much less abundantly on the marshes than formerly. Since close season is extended, may again increase. I observed over one hundred in one flock on Breydon flats, June 30th, 1897. Five killed, Dec. 4th, 1895. Some during sharp frost in December, 1899. Unusual in winter. Local, "Red-leg."

T. fuscus. Spotted Redshank.—N. U. "Occasionally met with on Breydon; . . . they are shot in all their plumages" (Paget), but are more often observed and obtained in the immature plumage of autumn.

T. canescens. Greenshank.—F. C. Occurs occasionally in spring, but more frequently in autumn. Small parties are met with sometimes in September on Breydon. When disturbed, its clear loud call of *pleu pleu pleu* is heard all over Breydon.

Limosa lapponica. Bar-tailed Godwit.—C. Abundant occasionally in May, although not so numerous as formerly. The gunners used to call "12th of May, Godwit day," having reference to its singular regularity of appearance. Saw seventy-seven on a Breydon flat, May 8th, 1895; seven hundred seen there, May 16th, 1898; about four hundred, May 10th, 1899. In spring is locally known as the "Red" Godwit, from its rufous attire.

L. belgica. Black-tailed Godwit.—R. R. This species formerly nested at Horsey, but has long ceased to do so; and is much less frequent than in the early part of the century. Several obtained on Breydon, Aug. 6th, 1896.

Numenius arquata. Curlew.—C. A few non-breeders continue with us all the summer. Numerous in autumn. Hundreds during the long drought in autumn of 1899 on Breydon, being starved out of the marshes. Preys here on Nereid worms living in the mud. Those known as "Harvest Curlews" are esteemed good eating, and are not so rank as those killed in winter. Specimen obtained on Breydon, Dec. 15th, 1899, weighed thirty-six ounces; the bill was 6¼ inches long.

N. phæopus. Whimbrel.—C. Generally numerous on Breydon in May, not so plentiful in autumn, and rarely seen in winter. Earliest recorded, April 12th, 1883. Always very noisy and remarkably wary. Local, "May-bird"; "Half Curlew."

Hydrochelidon nigra. Black Tern.—F. C. Formerly nested on the Broads, near Horsey; the last nest being found at Sutton in 1858. During the spring migration northward these birds seem to prefer following the trend of inland waters, leading the beach southwards in autumn. I have observed more cross Breydon in breezy weather than in calm. Thirty observed on Breydon, May 8th, 1894. I saw forty-two on a mud-flat in company with Gulls, May 8th, 1895. Local, "Blue darr."

H. leucoptera. White-winged Black Tern.—A. First recorded as British from a specimen killed at Horsey in May, 1853. In May, 1871, Mr. E. T. Booth shot four on Breydon; and five at Hickling, May, 1873, seeing several others. One on Breydon, April 13th, 1888; another seen there Aug. 12th, 1896.

H. hybrida. Whiskered Tern.—A. A female example was shot at Hickling on June 17th, 1847.

Sterna anglica. Gull-billed Tern.—A. Of the ten examples recorded for Norfolk, nine were obtained on Breydon; the first on April 14th, 1849; the last on Sept. 5th, 1896—an adult female approaching winter plumage.

S. caspia. Caspian Tern.—R. Nine examples, recorded in Stevenson's 'Birds of Norfolk' (vol. iii. p. 296), were killed at Yarmouth.

S. cantiaca. Sandwich Tern.—N. U. Examples obtained almost every year. Several on Breydon, Sept. 1892; two on Sept. 29th, 1894. I put one up from a floating timber on Breydon in Sept. 1899. It was sluggish, and reluctantly flew off in an easy Gull-like flight without protest.

S. dougalli. Roseate Tern.—A. It may be that this species was more frequent on our coast formerly than of late years, for Messrs. Paget remark that "Mr. Youell has known this to be shot here." One was seen by Mr. E. T. Booth on Breydon, May 26th, 1871. Of recent years it has been met with, and there is little doubt that it has nested on the Norfolk coast.

(To be continued.)

NOTES AND QUERIES.

AVES.

Robin in Shetland.—A specimen of *Erithacus rubecula*, which had been picked up dead on Mainland, Shetland, about a fortnight previously, was sent to me for identification on Feb. 13th, 1901. According to Saxby, the Robin is very rarely seen in the Shetlands; and the fact that it was unknown to my correspondent, who is well acquainted with the ordinary birds of the islands, bears this out. The specimen sent to me is probably a bird of the previous spring. The red of the throat and breast is bright, but rather pale, and of a yellowish shade.—O. V. Aplin (Bloxham, Oxon).

Blackcap Singing in February.—On Feb. 15th, at 8.35 a.m., as I was passing a small clump of bushes in a Clifton garden, my attention was attracted by an unexpected song; and in the bush I saw a Blackcap (*Sylvia atricapilla*) singing softly, as though to himself. He flew across the road when he saw me standing close to him, but at nine o'clock I found him singing again in the same place. It was a cold frosty morning, but the sun was coming out brightly. Possibly Blackcaps not infrequently winter in this neighbourhood; I was able to report one last year, on March 12th (vol. iv. p. 187).—Herbert C. Playne (Clifton College).

Marsh-Warbler at Bath.—I do not know if attention has been called previously to the probability that the Marsh-Warbler (*Acrocephalus palustris*) was in the habit of breeding at Bath (where several nests have been discovered more recently) nearly fifty years ago. Hewitson, in the third edition of his book ('Coloured Illustrations of the Eggs of British Birds'), which was issued in the years 1853–1856, in the article on the Reed-Warbler, writes:—" . . . . until the last summer, during which Mr. Brown, a birdstuffer in Bath, procured for me several nests from gardens in that city, lying near the river. These were placed indiscriminately in any shrub most conveniently situated for the purpose; one was in a lilac, another in a laurustinus; and since in such a position the precaution was unnecessary [this is a mistaken idea, if the nests were Marsh-Warblers'], they were not of the usual depth which commonly characterizes the nests of this species. They were not deeper than the nests of the Sedge-Warbler, and were composed almost entirely of grass, with bits of moss bound together with wool and spiders' webs, finer towards the inside; in one only there were a few hairs." The second figure on plate xxxii., which Hewitson put forth at the time as representing an egg of the Reed-Warbler, is a fairly good representation of a Marsh-Warbler's egg. Hewitson was of course unaware of this at the time, and merely remarks that it is a good deal like some of the eggs of *Sylvia orphea*. But at the end of his introduction he adds the following paragraph:—"The egg which is drawn at fig. ii. plate xxxii. is not that of the Reed-Warbler, but of *Salicaria palustris*, a continental species. It was sent me by mistake, *but will not inaptly represent some varieties which I have seen of eggs of our own British species*." These italics are mine. It seems to me very likely that the eggs referred to in the italicized passage came out of the nests procured at Bath, which Hewitson regarded as aberrant Reed-Warblers' nests, but which, from the description given of them, more nearly resembled nests of the Marsh-Warbler.—O. V. APLIN (Bloxham, Oxon).

Nutcracker in Sussex.—On Dec. 21st, 1900, a Nutcracker (*Nucifraga caryocatactes*) was shot at Chilgrove, nearly seven miles to the north of Chichester, by J. Woods, Esq. The last recorded specimen in Sussex was obtained on Nov. 3rd, 1893, in Stockbridge fields, near Chichester (Zool. 1895, p. 310), where it is also stated that Mr. Borrer, in his 'Birds of Sussex,' mentions but a single example of this bird obtained in Sussex, namely, one shot at Littlington in September, 1844.—H. MARMADUKE LANGDALE (Compton, Petersfield).

Lesser Spotted Woodpecker (Dendrocopus minor).—At 9 a.m. on Feb. 1st, 1901, I heard this bird repeatedly tapping in a chestnut-tree at some little distance from where I stood. The bird afterwards flew into a tree close to me, and uttered its curious Wryneck-like cry several times. Is it usual for this tapping sound to be heard during the winter? I see that the text-books state it is heard in the spring. — OLIVER H. NEW (Evesham).

British-killed Egrets (Ardea garzetta).—In Loudon's 'Magazine of Natural History' for 1836, p. 599, Mr. J. C. Dale, of Glanvilles Wootton, in Dorsetshire, mentions that "at a sale of birds, &c., I attended in March, 1826, at Southampton, was an Egret (a fine specimen), lot 38, sold for £5 5s., probably shot near that place." Possibly this is the same specimen alluded to by Mr. Newstead (*ante*, p. 70), as the date is exactly the same, and the locality in Yorkshire may have been subsequently added to the label under the impression that it had been killed in that county. In the same year also a Great White Heron (*Ardea alba*) is said to have been shot at Hornsea, in Yorkshire ('Magazine of Natural History,' 1839, p. 31). J. H. GURNEY (Keswick Hall, Norwich).

Hairy-plumaged Moor-hens.—During the last three years I have seen and examined five specimens of a singular variety of the Moor-hen (*Gallinula chloropus*). Two were caught on night-lines in the Severn, close to Shrewsbury; one shot at Wem, ten miles north of Shrewsbury; a fourth at Onslow, six miles west; the fifth in February last, at Plowden, twelve miles south. These localities are so far apart that the birds could hardly belong to one family; their exact similarity is therefore all the more remarkable. The back and all the upper parts are of a light yellowish brown, the under parts of a very light grey; the beak and legs of the normal colours, but slightly paler than usual. They are ugly birds—not nearly so pretty as ordinary Moor-hens. The most curious feature of the plumage is, however, the *texture* of the feathers. These, instead of having the pinnæ united into a compact web, have them all separate, especially on the exposed portion of each feather. The effect of this is that the bird looks as though it were clothed with hair rather than with feathers, just as in such flightless birds as the Emu and Apteryx. This defect—for it is a defect—extends even to the flight-feathers, so that the birds could not fly; the air would pass through the feathers as through a sieve. On examining the feathers by the microscope, I found that the barbs and hooklets which in ordinary feathers cause the pinnæ to cling together into a compact web are almost entirely absent on the body feathers; whilst in the quill-feathers many of the pinnæ have barbs on one side, but no hooklets to hold them together. The light colour of the birds is probably owing to the absence of the dark parts of the webs of the feathers—only the light-coloured shafts are present. The entire phenomenon strikes me as morbid and retrograde, yet all the specimens seemed healthy and in good condition. I had no opportunity of examining the viscera.—H. E. FORREST (Shrewsbury).

Early Jack-Snipe (Gallinago gallinula).—In support of Mr. H. S. Davenport's statement (*ante*, p. 31) that the Jack-Snipe, on first arriving, may be found in unlikely places, I write to say that towards the end of September or beginning of October, 1896 (I think), I flushed two birds of this species on the links here, and about that time I saw another which a local gunner had shot near the same place. I regret the present inaccessibility of my notes prevents me from giving the exact dates, but on my return to Kent these will be forthcoming if necessary.—A. H. MEIKLEJOHN (Kinloch House, St. Andrews).

Notes on Bird-Life from Redcar and District.—On Jan. 10th, 1901, a fine adult female example of the Stone Curlew (*Œdicnemus crepitans*) was shot on the beach here. On the 12th of the same month I procured an adult female Great Crested Grebe (*Podiceps cristatus*) in winter dress on the river Tees. In January I had an adult male Bittern (*Botaurus stellaris*) sent to me for examination. Its remains have been mounted for Mr. T. J. Wallace, of Richmond, who shot the bird near Northallerton, Yorkshire. During the last two months we have been visited by large flocks of Common Scoters, and small companies of Scaup and Long-tailed Ducks; I have handled four immature specimens of the last named species. Many Little Auks and Puffins have been picked up dead or in an exhausted condition during the past few weeks.—STANLEY DUNCAN (Redcar, Yorks).

The Origin and Meaning of the Names of British Birds.—Referring to Mr. Meiklejohn's communication on this subject (*ante*, p. 72), it does not seem to be by any means certain that there is any real connection between *poke* (=to thrust) and *poke* or *poche* (=a bag), whence we probably get *poacher*. Mr. H. T. Wharton stated that "Pochard is the bird that 'poaches,' that is, treads into the mire, as cattle do" (Zool. 1882, p. 446). We use the word "*poach*" in this sense in Oxon; and I have heard a word *potch* used to denote a falling into anything with a splash. Thus you may go *potch* into a puddle or a boggy place. I do not know if this is anything more than a slang word, but it is expressive. It is just possible (if this is an old word) that the Pochard may have been thought to *potch* into the water more than some other kinds of ducks. A bunch of Pochards certainly do make a great splash sometimes when they alight. But I do not wish to press this idea. It does not run in with "Poker." I am curious to know the ground for the suggestion that the name Pochard at first referred to the Wigeon (Zool. 1900, p. 514). By none of the early authors to whose works I have been able to refer is the Wigeon called Pochard, although the Pochard has been called Red-headed Wigeon. Unless Mr. Meiklejohn can show that the Welsh *Gwilym* (=a Guillemot) is the same word as the Welsh *Gwylan* (=a Gull; Breton *gwelan*, *goulen*, or *goelann*; Cornish *guilan* or *gullan*)—which is not likely—he will find it difficult to sustain his contention that the *guille* in Guillemot is the same word as *gull*. Ray (1674) has *Guilliam* for Guillemot; and Martin (1698) says that this bird is called "by the Welch a *Guillem*." Prof. Newton calls attention to the resemblance between the French Guillemot and Guillaume, and between the English "Willock" (a local name for the Guillemot) and William. Whether Guillemot is a French manufactured word or not, the first part of it at all events is undoubtedly cognate with, if not derived from, the Welsh Gwilym. It does not seem reasonable to suppose that the French called the Guillemot a "gull-gull," which would be the meaning of a Celtic-Teutonic compound of *gwelan*+*mouette* or *goeland*+*mouette*. I think that Nuthatch really does MEAN Nut-cracker (in the sense of Nut breaker). Hack (hak) means to cut, chop, or mangle. You cannot properly be said to hack a thing unless you cut into it, indent it, break it, or break a part off it. To "hack at" (p. 73) may be quite another thing. A bird may "hack at a nut, which may or may not be CRACKED by the blow." This is true; but if the nut is broken by the bird, then it has been hacked. The Nuthatch habitually breaks nuts.—O. V. APLIN (Bloxham, Oxon).

Note on the Weight and Specific Gravity of some Common Eggs.— It is with diffidence and some hesitation that I record the following details of some few eggs that I have weighed, and of which I have also taken the specific gravity, during the past egg season. It is very probable that the average weights of the eggs of the commoner species have been already recorded, and it is difficult for the dweller in the country, with few opportunities of consulting the literature of a subject, to be aware of what has been done. He is therefore restricted to the recording of facts of observation honestly, and with the greatest care and accuracy of which he is capable; and he must leave to those with larger material and better opportunities for reference at their command the deductions which may be drawn from the facts which he has put on record. This is perhaps the less to be regretted when one recognises the danger, so difficult to avoid, of being more or less unconsciously influenced by the exigencies of an imperfectly formed theory while recording the facts which may or may not support it.

The weighings given below were made on a chemical balance turning with ·001 gramme, and may be taken as accurate. The specific gravities must not be taken as absolute, but are accurate when compared *inter se*, the source of error being the weight and specific gravity of the fine india-rubber ring and thread used to support the egg while being weighed in water. It would doubtless have been desirable to have weighed a clutch of each species, but this was impossible in the time at my disposal; in two instances, however—*Turdus merula* and *Vanellus vanellus*—three eggs from the same nest were dealt with, and it will be seen that the variation in weight and specific gravity is very noticeable. Again, if the weights of eggs of the same species are to be compared, they should perhaps be weighed at the same age, though whether any appreciable change takes place until after the bird has begun to sit regularly is doubtful. In all the cases given, except three—*Alauda arvensis*, *A. phragmitis*, and *Sylvia sylvia*—the eggs were taken before the whole clutch was laid, and in none except the last named had the process of incubation apparently commenced. With these exceptions, however, the specific gravities may be taken as comparable. It was, of course, to be expected that the weights of eggs even from the same nest would vary, but the considerable variation in the specific gravities was unexpected, and may perhaps be partly due to a varying amount of salts in the shell and contents of the egg, caused by a greater or lesser amount of lime in the diet of the parent during the time the eggs are being matured; or it may possibly be partly due to difference of sex, which is probably determined before the egg is laid, as it is difficult to suppose that the process of incubation can determine sex.

Species.	Weight in grammes.	Mean Weight.	Specific Gravity.	Mean Sp. Gr.
Turdus merula	6·798	—	1·0450	
,, ,,	6·738	—	1·0435	
,, ,,	6·705	6·747	1·0536	1·0477
Turdus musicus	5·197	—	1·0400	
Chloris chloris	2·281	—	1·0560	
Emberiza citrinella	2·621	—	1·0484	
,, ,,	2·366	2·493	1·0501	1·0492
Emberiza schœniclus	2·084	—	1·0251	
,, ,,	2·157	2·120	1·0271	1·0261
Alauda arvensis	3·956	—	1·0318	
,, ,,	3·935	3·945	1·0266	1·0292
Hirundo rustica	2·052	—	1·0402	
,,	2·065	2·058	1·0335	1·0368
Sylvia sylvia	1·555	—	1·0668	
,, ,,	1·617	1·586	1·0561	1·0614
Vanellus vanellus	24·725	—	1·0750	
,, ,,	24·059	—	1·0240	
,, ,,	22·864	—	1·0650	1·0547
,, ,,	23·483	—		
,, ,,	24·046	—		
,, ,,	26·847	—		
,, ,,	27·328	—		
,, ,,	27·449	25·100		

HERBERT FORTESCUE FRYER (The Priory, Chatteris).

Weights of Birds.—The following birds were shot in Sussex, Kent, or Berkshire, and *weighed by me in the flesh*; so that I can answer for the weights being correctly enumerated. Nearly all the rarer species belong to me, and are now being exhibited at the Reading Museum :—

1894.—May 5th. Dunlins, 1 oz. 1 drachm; 1 oz. 2 drachms; 1 oz. 6 drachms.

July 1st. Avocet, 9½ oz. 3rd. 10½ oz.

Aug. 20th. Crossbill, 1¼ oz.

Sept. 13th. Oystercatcher, 1 lb.; Knot, 4 oz. 17th. Merlin, 7 oz. 1 drachm.

Oct. 22nd. Sheldrake (young), 2 lb. 6 oz. 28th. Peregrine (immature female), 2¾ lb.

Nov. 10th. Shoveller (male), 1 lb. 3 oz. 16th. Avocet, 9 oz.

Dec. 27th. Merganser (female), 1 lb. 10 oz. 31st. Great Northern Diver (starved, immature), 6 lb.

1895.—Jan. 7th. Norfolk Plover, 1 lb. 5½ oz. 23rd. Wild Duck, 2 lb.; ditto (female), 2 lb. 2 oz. 16th. Little Auk, 4 oz.

Feb. 1st. Little Auk, 3 oz. 7 drachms. 11th. Velvet Scoter (male), 3½ lb.; (female), 2¾ lb. 18th. Whooper, 16 lb. 19th. Ditto, 28 lb.; Red-throated Diver, 5 lb. 5 oz. 24th. Guillemots, 2 lb. 12 oz. 2 lb. 7 oz.

April 19th. Hoopoe, 3 oz.

May 4th. Bar-tailed Godwit (male), 8½ oz.; Whimbrel (heaviest of five 1 lb. 2 oz., lightest of five 12 oz.); Bar-tailed Godwit (male), 8 oz. 6th. Black-tailed Godwit (female), 10 oz.; male ditto, not quite 9 oz.

June 14th. Kentish Plover (male and female), 2 oz. each. 30th. Little Crake, barely 2 oz.

Oct. 18th. Red-necked Phalarope, 1 oz. 19th. Spotted Crake, 3½ oz.

Nov. 2nd. Mute Swan (immature), 14 lb.

1896.—Feb. 1st. Guillemot (full summer plumage), 4 lb. 3 oz. 3rd. Red-throated Diver, 4 lb. 14 oz. 4th. Buzzard (male), 3 lb. 25th. Goosander (male), 4¼ lb.; Hen-Harrier (female), 1 lb.

March 3rd. Marsh-Harrier (female), 1 lb. 5 oz.

Sept. 5th. Osprey (male), 2 lb. 9 oz.

Oct. 5th. Grey Phalarope, 1 oz. 1 drachm.

Nov. 12th. Little Grebe, 6 oz. 24th. Eared Grebe, 9 oz.

Dec. 5th. Gadwall (hen), 2 lb. ½ oz. 6th. Smew (female), 15 oz. 8th. Cormorant (young male), 6 lb.

1897.—Jan. 3rd. Black Scoter, 1 lb. 15 oz. 7th. Puffin, 7½ oz. 13th. Great Black-backed Gulls, 2 lb. 13 oz., 3 lb. 9 oz.

Feb. 8th. Sclavonian Grebes, 12 oz., 11 oz., 13 oz. 14th. Great Crested Grebe, 2 lb. 2 oz. 26th. Peregrine, 1¾ lb.

March 29th. Great Crested Grebe, 1 lb. 14 oz.

Aug. 11th. Little Gull, 4½ oz.

Sept. 24th. Roller (female), 5 oz.

1898.—March 1st. Great Crested Grebe, 1 lb.

April 25th. Common Geese, 10 lb. 7 oz., 8 lb. 8 oz.

Nov. 19th. French Partridge, 1 lb. 2 oz.

Dec. 16th. Garganey (young male), 11 oz.

1899.—Jan. 18th. Bittern, 2 lb. 7 oz.

1900.—Jan. 15th. Common Gull (immature), 1 lb. 7½ oz. 17th. Smew (young male ?), 13 oz. 31st. Kittiwake, 10 oz.

Feb. 16th. Great Crested Grebe (female), 1 lb. 14 oz. 21st. Ditto (male), 2 lb. 7 oz. 22nd. Wigeon (male), 1 lb. 9½ oz.; Pochard (male), 2 lb. 6¼ oz.; Golden-eye (male), 2 lb. ¼ oz.

May 1st. Cuckoo, 4½ oz.—GEORGE W. BRADSHAW (54 London Street, Reading).

EDITORIAL GLEANINGS.

A PAPER recently read before the Royal Society by Mr. W. T. Blanford, LL.D., &c., is written with the object of investigating the zoological divisions of British India and its dependencies, including Ceylon, as shown by the evidence afforded by the eight volumes of the 'Fauna of British India,' containing the descriptions of the Vertebrata. For the purpose of this investigation the whole area of India, Ceylon, and Burma has been divided into tracts, nineteen in number, distinguished by various physical characters, such as rainfall, height above the sea, presence of forest, &c., and tables showing the distribution of each vertebrate genus in these different tracts have been prepared. Briefly the results are the following:—

The whole area contains portions of five different subregions, two of which are assigned to the Holarctic (Palæarctic) region, and three to the Indo-Malay (Indian or Oriental). The first two are (1) the Punjab and Sind, with Baluchistan regarded as appertaining to the Eremian, Tyrrhenian, or Mediterranean province; and (2) the higher Himalayas and Western Tibet, which belong to the Tibetan subregion. The three Indo-Malay subregions are (1) the Cisgangetic, formed by the Indian Peninsula and Ceylon, the only subregion entirely confined to the area; (2) the Transgangetic, comprising the Himalayas, Assam, and Burma within the area, and Southern China, &c., farther to the eastward; and (3) the Malayan, to which Southern Tenasserim is referred. These subregions correspond to those of Wallace, except that his Ceylonese and Indian subregions are united.

The differences between the Cisgangetic and Transgangetic faunas are explained, and it is shown that in Peninsular India, with Ceylon, traces of three distinct elements can be found in the fauna. One of these—the Indo-Malay—is common to India and the countries east of the Bay of Bengal. Another, termed Aryan, is probably a late tertiary, perhaps a pliocene immigrant from Central Asia, and is well represented in the Siwalik fossils; whilst the third, consisting of certain reptiles, batrachians, and invertebrates peculiar to Southern India and Ceylon, is thought to have probably inhabited the country longer than either of the others.

The manner in which the Burmese and Assamese fauna has penetrated the Himalayan forest area, dying out gradually to the westward, is attributed to recent immigation from Assam after the glacial epoch. This and several other peculiarities of the distribution, such as the occurrence of certain genera in both Burma and Southern India, but not in Northern India, may be explained if the temperature of India generally went much lower in Pleistocene times; and the probability of this conclusion is strongly supported by the evidence in the Himalayas of glaciers having formerly descended 7000 feet lower than they do at present.

Mr. Robert Service, of Dumfries, has printed for private circulation a paper he read before his local Society last November on "The Vertebrates of Solway: a Century's Changes." These changes are not inconsiderable. On the rougher and hill portions of the country Black Cattle have long since been replaced by Sheep, and as a consequence heather is slowly dying out. We read that the Badger has approached extinction; the Common Seal (*Phoca vitulina*) does not visit the Solway waters with its former regularity; the Black Rat may be considered as extinct; the Common Hare only holds its own. In birds, the Martin is decreasing in numbers, and the Goldfinch even more so; the Barn-Owl seems dying out, and the Hen-Harrier, though plentiful half a century ago, is now scarcely ever seen. On the other hand, the Mistle-Thrush, once uncommon, is now a familiar species; the White Wagtail is more regular in appearance; the Pied Flycatcher breeds regularly in several places; whilst the Starling has become a most abundant species. The Adder (*Pelias berus*) must have been once very common. Mr. Service was informed that during the reclamation of a farm from Lochar Moss the number of Adders killed averaged forty per acre. In fishes, the Cod is no longer the same in number or size; but the Anchovy, which arrived in the Solway waters in 1889, remains in quantity.

The Fourteenth Annual Meeting of the Western Province Game Protection Association was held at Cape Town on Aug. 30th last. It is most satisfactory to find that even in Cape Colony the larger game animals are not yet exterminated. We extract the following from a report in the 'Cape Argus':—

"From information supplied by the Agricultural Department, the following varieties of big game appear still to be found in the Colony. The numbers, however, are only approximate, as it is feared that during the disturbed condition of the Northern Border of Bechuanaland much unauthorised shooting of big game took place:—Blesbok: About 400 in Steynsburg division. Bontebok: About 220 in Bredasdorp and Swellendam divisions. Buffaloes: Over 700 in Albany, Alexandria, Bathurst, and Uitenhage divisions. In the first two of these districts they were specially protected until March 27th, 1901, and in Bathurst until Oct. 2nd, 1900.

Elephants: About 25 in Knysna, and 120 in Uitenhage divisions. Gemsbok: About 4000 principally in Bushmanland and Bechuanaland, with a fair lot in Barkly West division. Koodoos; 4000, found mostly in the divisions of Uitenhage, Willowmore, Jansenville, Port Beaufort, Albany, Victoria East, and Vryburg; and in lesser numbers in Ladismith, Oudtshoorn, Prince Albert, Riversdale, Griqualand West, Kuruman, and Mafeking. Oribi: A few are still to be found in Bathurst division, where they were specially protected until Jan. 31st, 1901; and in Griqualand East (where they are specially protected), and in Bathurst until Oct. 21st, 1900. Rietbok: About 450 in Komgha and Kimberley divisions, and a few in Griqualand East, where they are specially protected until May 28th, 1902. Zebra: Between 300 and 400. The bulk of them in George, Oudtshoorn, and Uniondale divisions, with a few detached troops in the divisions of Cradock, Prince Albert, and Somerset East. Hartebeest and Wildebeest in fairly large numbers are found in Bechuanaland and Griqualand West, but continued unauthorised slaughter of these animals on the unoccupied lands on the desert borders has, it is feared, already largely reduced the numbers; but the Game Laws Amendment Act, No. 33, of 1899, passed last session, will, it is hoped, enable effective measures to be taken to put a stop to such acts. The presence of these animals in large or small numbers in the former locality depends largely on the state of the veld, and the dryness or otherwise of the season in the Kalahari Desert. Wild Ostriches: About 2500, principally in Bechuanaland, Griqualand West, and Bushmanland."

THE vanishing Mammalian Fauna of South Africa is the subject of an interesting article in the 'Cape Times' of Nov. 28th, by Frederick R. N. Findlay, from which we quote as follows:—

"It is marvellous how rapidly the countless herds of game that once roamed over the rolling plains of South Africa* have been practically exterminated. The exquisite fauna of Africa in the past added greatly to the charm and fascination which that continent has had for so many men, but they are being swept away by an unenlightened 'civilization.' Some useful and magnificent forms of feral life are already as extinct as the Dodo, and others are on the verge of extinction. No more could a Pringle sing:

'And the timorous Quagga's wild whistling neigh
Is heard by the fountain at fall of day';

for the last of its tribe fell more than a score of years ago. The Blaauwbok (*Hippotragus leucophæus*) has gone these hundred years, and its beautiful relation, the Roan Antelope (*H. equinus*), is nowhere plentiful. The White

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* "For the purposes of this article, when speaking of South Africa I mean the territory lying to the south of the Zambesi and Cunéné Rivers."

Rhinoceros (*Rhinoceros simus*) can almost be said to be extinct; its black brother (*R. bicornis*) is now rarely found south of the Zambesi River, and even the Black Wildebeest is in danger of extinction. A brief period of sixty-three years has elapsed since Captain (afterwards Sir) Cornwallis Harris,* while encamped near the present site of Pretoria, at the foot of the Cashan Mountains (Magaliesberg), encountered large numbers of Rhinoceroses, and recorded what he had seen in the following words:—'The country now literally presented the appearance of a menagerie, the hosts of Rhinoceroses in particular that daily exhibited themselves almost exceeding belief. Whilst the camp was being formed an ugly head might be seen protruded from every bush, and the possession of the ground was often stoutly disputed. In the field these animals lost no opportunity of rendering themselves obnoxious, frequently charging at my elbow when in the act of drawing the trigger at some other object, and pursuing our horses with indefatigable and ludicrous industry, carrying their noses close to the ground, moving with a mincing gait, which ill beseemed so ungainly and ponderous a quadruped, and uttering the while a sound between a grunt and a smothered whistle.' And, again: 'On our way from the wagons to a hill, not half a mile distant, we counted no less than twenty-two of the white species of Rhinoceros, and were compelled in self-defence to slaughter four. On one occasion I was besieged in a bush by three at once, and had no little difficulty in beating off the assailants.' To-day the Cashan Mountains are topped with frowning forts overlooking a great town—Pretoria.

"In Pretoria a collection of animals was started some months before the war broke out; the Government bought a very valuable and extensive property bordering on the Aapies River, at the northern extremity of the town, and presented it to the National Museum for the purpose of erecting a new museum building and starting a Dieren-tuin (Zoological Garden). In September, 1899, a good start had been made at the building of the new museum, and quite a fine collection of animals for the Zoo had already been secured by Dr. Gunning; when I last saw them they were flourishing in their extensive runs. It was a Staats or Government institution, but we hoped soon to frame a scheme which would have made it a public concern. A few months ago there was some correspondence in the local papers as to starting a Zoo at Cape Town, but I for one do not think it is advisable to make the first attempt here. Mr. Rhodes has already a fine collection of animals on his Groote-Schuur estate, and the public have free access to the beautiful grounds. I consider Pretoria to be the most suitable place in South Africa for an extensive National Zoological Garden. In arriving at this conclusion I have borne the following facts in mind:—

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* 'Wild Sports of Southern Africa,' pp. 182, 183 (fifth edition, 1852).

"Firstly, a fine property has been secured for that purpose; there is plenty of water in the river, and Hippopotami and Crocodiles, and other water-loving animals, birds, and fish will undoubtedly thrive splendidly; indigenous trees or rather shrubs, grass, and reeds abound, and the animals will at once be at home there.

"Secondly, the valley in which Pretoria now stands was, as I have already pointed out, once the habitat of a great variety of game; consequently it may reasonably be hoped that animals will prosper better there than, for instance, Cape Town,* with its climate and pasturage almost foreign to some species; or than in the London Zoo, with its fogs, cold weather, and new conditions of life.

"Thirdly, Pretoria, situated as it is, will be able to secure specimens of many rare animals in the Sabi Valley and elsewhere at a comparatively low cost, for there will be no great difficulty about transporting them.

"Fourthly, it is hoped that an extensive track of at present almost valueless country, either in the districts of Waterberg or Zoutpansberg, or the Sabi Valley, may be secured from the Government in the near future, for the purpose of forming an immense reserve. I feel confident that, once such a grant has been obtained, funds sufficient to enable us to close the territory, and to drive in and secure as much game as possible, will be forthcoming from the many men who wish to see a comprehensive scheme for the preservation of wild animals set on foot."

BIRD MIGRATION IN GREAT BRITAIN AND IRELAND.—The Third Interim Report of the Committee appointed to work out the details of the Observations of Migrations of Birds at Lighthouses and Lightships, 1880–87, was presented at the recent meeting of the British Association at Bradford, and consists of a "Statement furnished to the Committee by Mr. W. Eagle Clarke, containing a summary of the observations as regards (i.) the Song-Thrush (*Turdus musicus*), and (ii.) the White Wagtail (*Motacilla alba*)." As regards the extreme value and interest of the publication, the Committee well remark that it "throws such a light on the natural history, and especially the movements, of those two species as has never been possessed before."

* "It must, however, in fairness, be remembered that when Van Riebeek and his Dutch companions landed in Table Bay in April, 1652, they found a great profusion of animal life roaming upon its shores. Hippopotami occupied a swamp, it is said, on the present site of Church Square, and 'Harts and Elands' were numerous on the slopes of Table Mountain. The surrounding country was 'swarming with Elands, Hartebeests, and Stemboks,' and Lions were numerous and bold; even as late as June, 1694, nine Cows were killed by Lions within sight of the Castle; and the animals in Mr. Rhodes's Zoo have hitherto thrived fairly well, although some of the species are but poor representatives of their wild brothers."

"Communications" I., published last November by the "Millport Marine Biological Station," contain a summary of a paper "On Negative Evidence regarding Influence of Nutrition on Sex," by J. F. Gemmill, Lecturer on Embryology, University of Glasgow.

It is well known that during a certain period in the early development of most animals no difference, external or internal, can be detected between the males and females. This undifferentiated stage is considered by some to be a stage of sexual indifference more or less complete. There is a well-known theory that during the period in question the future sex of individuals may be influenced by nutrition in such a way that a female bias is given by rich and plentiful food, and a male bias by the opposite condition. To test this hypothesis, Mr. Gemmill selected two molluscs for observation —the Edible Mussel (*Mytilus edulis*), and the Common Limpet (*Patella vulgata*). We give some extracts as regards the evidence afforded by the first:—

"Mussels may be found in suitable places on the tidal zone at all levels' from a little below high-water mark, downwards. They feed only when immersed under water—that is to say, when the tide is sufficiently far in to cover them. Mussels placed high up on the tidal zone are thus able to feed only intermittently, and during short periods. They grow slowly, and remain small in size. The average weight of low-level Mussels on Keppel Pier, Millport, is six or seven times greater than the average of high-level specimens. These facts and similar facts regarding the fixed animals on the tidal zone (*e.g.* Barnacles) point to comparative starvation of high-level specimens as contrasted with those which occupy a lower position.

"In the life-history of the Mussel there is first a free swimming stage, then the larvæ settle down and become permanently attached. At the time when they fix themselves, and for a considerable period afterwards, their sex, so far as I could make out by careful histological examination, is still undifferentiated. During the first period of growth and differentiation of sex, the young Mussels are subject to the different nutritive conditions indicated above, according as they have placed themselves high up or low down on the tidal zone. Nature thus supplies all the factors necessary for an experiment, and works out the experiment herself. It only remains to observe, in a large number of specimens taken from different localities, the relative proportion of males and females at different levels. By comparing these proportions we shall be able to tell whether richness or poorness of nutrition, acting under the conditions above indicated, have had any influence in determining sex in the young Mussel. A large number of Mussels were accordingly examined. In order to avoid local peculiarities, the batch of Mussels were taken from many different localities.

"*Results.*—Out of the total number examined, 49 per cent. were males, 51 per cent. females. Of the Mussels taken from high level, 47 per cent. were males, 53 per cent. females. Of the Mussels taken from mid-level, 48 per cent. were males, 52 per cent. females. Of the Mussels taken from low level, 51 per cent. were males, 49 per cent. females. From these figures it will be seen that the proportion of the sexes varies within very narrow limits at the different levels. There is certainly not a greater proportion of males at the upper poorly nourished zones, nor a greater proportion of females in the lower zones. Indeed, the differences, such as they are, point the other way."

At the meeting of the Linnean Society held on Feb. 7th a paper was read by Mr. H. M. Bernard, "On the Necessity for a Provisional Nomenclature for those Forms of Life which cannot be at once arranged in a Natural System." Taking the Stony Corals as an illustration, the author showed how impossible it is to classify them into "species" in the present state of our knowledge (1) of the living forms themselves, and (2) of what we should mean by the term "species." He found himself compelled to invent some method of naming them which shall enable their natural history to be written, so far as it can be discovered, without at the same time having to pretend that, in so doing, the specimens are being classified in the modern evolutionary sense—that is, according to their true genetic affinities. This "natural order" can only be based upon an exhaustive study of all the discoverable variations, and only then will it be possible to arrange these variations into natural groups or "species." Further, this study, if its results are to be trustworthy, must have had regard not only to the structural details of the specimens, but also to their natural conditions of existence, in order that all these variations, which are purely accidental and adaptational, *e.g.* due to special currents, or to favourable or unfavourable positions on the reef, may be eliminated; for only those which have been normally inherited can be admitted into an evolutionary classification—at least, as at present understood.

The author contended therefore that the present exclusive adherence, for all purposes of description, to the Linnean binomial system, which implies classification when classification can only be attained as the end and crown of our work, is philosophically absurd and practically disastrous. The absurdity of starting by assuming what it is the object of all our researches to find out is self-evident; while the hindrance to progress due to waste of energy, to the assumption that the goal is attained, to the natural indisposition to rearrange previous classifications, to the synonymies which continue to grow, and must ever continue to grow, as our knowledge—which advances in spite of our methods—compels us to bring our premature classifications nearer and nearer to the natural order, only need to be mentioned to be equally self-evident.

A provisional nomenclature was therefore proposed, in order to make work possible in those groups in which, as in the Corals, classification, except in its barest outlines, is premature. The author suggested that this consists (1) of the existing generic name (or, when that cannot be discovered, the family name); (2) of the locality in which each specimen has been found; (3) of a fraction which can be understood from the following illustration:—"*Porites*, Singapore $\frac{4}{20}$" would mean that there are twenty apparently distinct forms of *Porites* known to occur at Singapore, and the particular one referred to is that which was described and figured as No. 4. If a new *Porites* be found in the same locality, *i. e.* a *Porites* not immediately referable to any yet figured, its designation for reference would be "*Porites*, Singapore $\frac{21}{21}$." The formula which shall be ultimately agreed upon ought to be formally adopted.

DR. SMITH WOODWARD, at a meeting of the Zoological Society on March 5th, read a paper on some remains of extinct Reptiles obtained from Patagonia by the La Plata Museum. They included the skull and other remains of a remarkably armoured Chelonian, *Miolania*, which had previously been discovered only in superficial deposits in Queensland and in Lord Howe's Island, off the Australian coast. The genus was now proved to be Pleurodiran. There was also a considerable portion of the skeleton of a large extinct Snake, apparently of the primitive genus of the South American family *Ilysiidæ*. Along with these remains were found the well-preserved jaws of a large carnivorous Dinosaur, allied to *Megalosaurus*. Either the Dinosaurian Reptiles must have survived to a later period in South America than elsewhere, or geologists must have been mistaken as to the age of the formation in which the other reptiles and extinct mammals occurred. The discovery of *Miolania* in South America seemed to favour the theory of a former antarctic continent; but it should be remembered that in late Secondary and early Tertiary times the Pleurodiran Chelonians were almost cosmopolitan. Future discovery might thus perhaps explain the occurrence of *Miolania* in South America and Australia, in the same manner as the occurrence of *Ceratodus* in these two regions was already explained.

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